

**AMENDMENTS TO THE DRAWINGS**

Please substitute the attached five (5) sheets of replacement drawings for the drawings originally filed.

### **REMARKS/ARGUMENTS**

Claims 1-13 stand rejected in the outstanding Official Action. Applicants have cancelled without prejudice claim 3 and amended claims 1, 2, 4, 5, 9, 12 and 13. Accordingly, claims 1, 2 and 4-13 remain in this application.

The Examiner's acknowledgment of Applicants' claim for priority and receipt of the certified copy of the priority document is very much appreciated. Additionally, the Examiner's consideration of Applicants' previously filed Information Disclosure Statement is appreciated.

On page 2, section 1 of the Official Action, the originally filed drawings are objected-to by the Examiner. Applicants enclose herewith 5 sheets of formal drawings to replace the originally filed formal drawings. Care has been taken in these replacement drawings to include the descriptive terms set out in Applicants' specification for the variously recited structures. Accordingly, entry and consideration of the replacement drawings is requested.

The Patent Office objects to the arrangement of the specification. It is appreciated that the Examiner has brought the arrangement of the specification to the applicant's attention. It is noted that the objection to the arrangement appears to be an indication that the originally filed specification does not meet the formality requirements of the U.S. Patent and Trademark Office. The Patent Office is reminded that the U.S. Patent and Trademark Office must comply with all articles of the Patent Cooperation Treaty (PCT) including Article 27. It has been held that:

"if the rule and interpretation of the PTO conflicts with the PCT, it runs afoul of Article 27 of the PCT which provides in part:

- (1) No national law shall require compliance with requirements relating to the form or contents of the international application different from or additional to those which are provided for in this Treaty and the Regulations." Caterpillar Tractor v. Commissioner, 231 USPQ 590, 591 (EDVA 1986).

The Patent Office has referenced this decision in the Official Gazette dated September 9, 1986 (1070 TMOG 5).

As a consequence, the Patent Office may not require specification format changes as long as the originally submitted documents comply with the PCT requirements. Inasmuch as this specification was forwarded for WIPO, by definition, it meets the PCT requirements (it is not forwarded until it meets PCT requirements). Therefore, the objection to the specification is respectfully traversed and reconsideration thereof is respectfully requested.

Notwithstanding the above, applicant has added headings and subheadings to the specification.

Claims 1-13 stand rejected under 35 USC §112 (second paragraph) as being indefinite. Specifically, the Examiner objects to the terms “radiation field state” and “radiation field states.” Applicants have amended claims 1-13 to consistently recite that the “primary radiation source” has “at least one radiation field state” and that the “means for generating” generates a “plurality of radiation field states.” These amendments are believed to obviate the Examiner’s noted indefiniteness with respect to claims 1-13 and any further rejection thereunder is respectfully traversed.

The Examiner also seems to raise a question with respect to what is meant by “radiation field state” or “radiation modal structure” in the outstanding Official on page 3, section 6. These terms, i.e., “state,” “mode” and “modal” are commonly understood in millimeter wave engineering and optical engineering and are a reference to the radiation modes that may exist in a waveguide or an optical fiber or even in free space transmission. The “structure” referred to is merely the structure of the modes. Applicants enclose herewith European Patent 0 292 277 which demonstrates that the use of the term “radiation mode structure” is a well-known term to

those of ordinary skill in the art. The terms used, i.e., “radiation field state” and “radiation modal structure” are similarly well known and the state of electromagnetic radiation fields would be well understood by those of ordinary skill in the art. Accordingly, further amendment of the claims in this regard is not believed necessary.

Also in section 6 on page 3 of the Official Action, the Examiner alleges that claims 1, 2 and 4-13 are indefinite because they are misdescriptive. Specifically, the Examiner alleges that the invention “requires an enclosure in order to operate” (emphasis added) but claims 1, 2 and 4-13 leave out this element. Applicants’ preferred embodiment operates in a partial enclosure (the existence of apertures 4 prevent this from being a complete enclosure). However, each applicant is entitled to claim his or her invention as broadly or narrowly as desired.

It is well settled that all required elements for an invention to operate do not have to be recited in the claim. For example, in the recitation of an aircraft comprising a motor with a propeller where the details of the motor mount or the propeller control mechanism is the invention, it is perfectly acceptable to claim just the inventive elements or combination. There need not be a recitation of the wings, or tail structure, or anything else required to make up an aircraft. Rather, the claim only need to be directed to the invention which is believed new, unique and unobvious.

The current claims of record in this application specify a millimeter or sub-millimeter wave illumination system and recites the elements and their interrelationship which comprises the present invention. Because Applicants use the word “comprising,” it does not exclude other elements (a closed container or a container with apertures) which those of ordinary skill in the art will understand may also be used in a preferred or working embodiment. However, Applicants’ claims are limited only to the invention which is the subject matter of the present application.

Therefore, in view of the above, the Examiner's suggestion that an "enclosure" must be recited in Applicants' independent claims as an essential element is respectfully traversed. Should the Examiner persist, he is respectfully requested to cite the appropriate MPEP section as well as Federal Circuit case law upholding such section requiring all elements essential to the operation of an invention to be recited in a claim. Absent such specific indication of such required structure, the rejection of claims 1-13 under 35 USC §112 is respectfully traversed.

Beginning on page 4 and continuing over through the first three paragraphs on page 5 of the Official Action, the Examiner makes a number of minor objections to claims 1, 2, 4, 5, 9 and 13. These objections to the claim language are well taken and Applicants have amended each of the claims in order to obviate any further basis for rejection. For example, the phrase "of interest" has been deleted and a hyphen has been added between the word "non" and "transmissive." The reference to "radiation field state or states" has been deleted and instead each of the claims merely references the "means for generating" as recited in claim 1. The word "it" has been deleted, as has the objected to phrase "capable of moving." In view of the above, claims 1-13 are believed now to be clearly definite under the provisions of 35 USC §112 (second paragraph).

In the fourth paragraph on page 5 of the Official Action, the Examiner objects to the use of the phrase "sub-millimetre" as being indefinite. It is settled that terminology well known to those of ordinary skill in the art need not be specifically defined in Applicants' specification or claims. In the present instance, "millimetre" and "sub-millimetre" waves are a well-known division of wavelengths of radio wave transmissions. Applicants enclose as an exhibit hereto an image taken from <http://aro.as.arizona.edu> which shows that millimeter waves and sub-millimeter waves are a well-known division of radio wave wavelengths and this would be well

known by those of ordinary skill in the art. A review of this website will clearly reflect this understanding, but should the Examiner believe that a declaration from an expert in the field confirming this fact is required, Applicants will endeavor to provide this additional confirmation.

In the paragraph bridging pages 5 and 6 of the Official Action, the Examiner goes through an analysis confirming that Applicants' "means for generating" is indeed a recitation in means-plus-function format under the 6<sup>th</sup> paragraph of §112. The Examiner's admission that there is a discussion in the specification at page 5, lines 4-16 and page 8, lines 10-22 of functions to be performed which support the "means-plus-function" language is appreciated.

However, the Examiner suggests that there is no plain recitation in the specification of any structures performing the functions specified in the claims. This allegation is respectfully traversed and the Examiner's attention is directed to elements 7 and 8 in Figure 2, elements 11 and 12 in Figure 4, elements 13 and 14 in Figure 5 and elements 15-20 in Figure 7. These elements, along with their associated descriptions, identify the structural elements which correspond to the means-plus-function recitations in Applicants' independent claims.

Furthermore, it is noted that the text of claims 4-11 all provide specific structures for various preferred embodiments that further limit the independent claims. Accordingly, any further objection to claims 1, 4, 5, 9, 10 and 11 is respectfully traversed. If the Examiner can identify some specific means-plus-function structure from the claims which he believes is not disclosed in the above-cited portions of Applicants' specification, Applicants will be happy to provide a further clarification, even though this would appear to be well known to those of ordinary skill in this art.

In section 7 on page 8 of the Official Action, the Examiner alleges that the specification does not adequately teach how to make and use the invention. As a basis for this rejection, in the

first paragraph under section 7, it appears that the Examiner believes that the specification does not disclose structure corresponding to the means-plus-function limitations in the claims. As has been noted above, such structures are indeed specifically discussed and recited in Applicants' specification and disclosed in Applicants' figures. Therefore, Applicants do not understand what the Examiner is referring to and clarification is requested as to what specific claim structure in each claim is not supported in Applicants' specification.

Also in section 7 in the paragraph bridging pages 8 and 9, the Examiner alleges that the specification fails to disclose how to make or use the invention without an enclosure or container. Again, Applicants do not understand how or why the Examiner believes that containers (to the extent they are necessary for operation and, as will be seen, this contention is respectfully traversed) are not shown in Applicants' figures and fully described in the Specification.

Each of Applicants' figures and the corresponding specification discloses container 3 which comprises the claimed "baffle" having a non-transmissive surface and a plurality of transmissive exit apertures positioned therein, all in accordance with Applicants' independent claim. As can be seen by one of ordinary skill in the art, it may not be actually necessary to have a complete or perfect "enclosure", i.e., one with no apertures. In other words, the radiation from the source will propagate from the output and portions of it will pass through the apertures in the "baffle." The movement of the wall 7 (comprising the claimed "surface") is moved by actuator 8. Of course, there would be no requirement of an end wall in a container 6, although this is in fact a preferred embodiment. It is only necessary to have the primary radiation source emitting radiation, the baffle with apertures therein, the reflective surface and the means for generating the plurality of radiation field states in a predetermined time interval. As explained in

Applicants' specification on page 8, lines 10-22 and elsewhere, the movement of the actuator moves the wall 7 and therefore changes the radiation reaching the apertures in the baffle.

While a container is a preferred embodiment and is disclosed in Applicants' figures, one of ordinary skill in the art will understand that a container as such is not a critical requirement and that Applicants' invention would operate without a completely closed container, although perhaps not as efficiently as the closed container. How or why the Examiner believes that a completely closed container is necessary for operation is not understood, especially since it is clear that the containers 3 and 6 are not completely closed, i.e., they both have apertures in the wall acting as the "baffle." There could be additional apertures elsewhere in the container which, while perhaps reducing the efficiency of the output, would nonetheless permit the device to operate.

Accordingly, Applicants' specification clearly discloses the subject invention to those of ordinary skill in the art and completely supports the minimum elements required by the claims. Accordingly, any further objection to the specification as in section 7 on page 8 of the Official Action is respectfully traversed.

In section 9 of the Official Action, the Examiner rejects claims 1-13 with their enablement purportedly not being supported by the specification. Again, as noted above, Applicants' claim language is fully supported by the specification and the figures and the appropriate portions of the specification discussing the figures. The critical elements of the invention and their interrelationship are positively recited in each of Applicants' independent claims and these elements are clearly disclosed in the drawings and discussed in the specification. Accordingly, there is believed to be no support for the Examiner's contention that



the claims are not enabled by the present specification and drawings. Accordingly, any further rejection under 35 USC §112 is respectfully traversed.

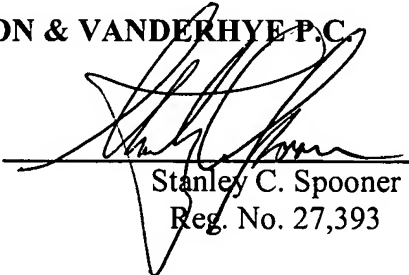
It is very much appreciated that the Examiner has found no prior art anticipating or rendering obvious the subject matter of Applicants' independent claims and therefore the claims would appear to contain allowable subject matter. Confirmation of this allowable subject matter over all known prior art is respectfully requested.

Having responded to all objections and rejections set forth in the outstanding Official Action, it is submitted that claims 1, 2 and 4-13 as amended are in condition for allowance and notice to that effect is respectfully solicited. In the event the Examiner is of the opinion that a brief telephone or personal interview will facilitate allowance of one or more of the above claims, he is respectfully requested to contact Applicants' undersigned representative.

Respectfully submitted,

**NIXON & VANDERHYTE P.C.**

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Attachments:

Replacement Sheets (5)  
Exhibit 1 – Image taken from <http://aro.as.arizona.edu>  
Exhibit 2 – EP 0 292 277